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Fall 2018

EVSC 614-101: Quantitative Environmental Risk Assessment

Chaudhery Mustansar Hussain

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Chemistry: *Fall 2018 Course Syllabus*

NJIT Academic Integrity Code: All Students should be aware that the Department of Chemistry & Environmental Science (CES) takes the University Code on Academic Integrity at NJIT very seriously and enforces it strictly. This means that there must not be any forms of plagiarism, i.e., copying of homework, class projects, or lab assignments, or any form of cheating in quizzes and exams. Under the University Code on Academic Integrity, students are obligated to report any such activities to the Instructor.

COURSE INFORMATION

Course Description:

Applications of quantitative risk assessment concepts to the management of environmental problems. Approaches used to identify, evaluate, and manage environmental risks. Focus on interactions among ecological, economic, and social considerations, Problem formulation, and methods selection, Case studies, Project-oriented.

Environmental assessment refers to a variety of tools used by resource managers, scientists, and interested stakeholders to evaluate how changes in the environment might affect the health of a target entity. These entities can be cells, organs, individuals, populations, communities, ecosystems, regions, or the earth itself. The effects can arise from chemical, biological, or physical sources and can be transmitted by any medium; e.g., air, water, soil, food, cosmetics, etc. As a consequence, environmental risk assessment is an inherently wide-ranging topic. This can seem daunting at first. However, at its heart, environmental assessment and analysis is a general framework for environmental problem solving. These are skills that you have been developing throughout your career as an Environmental Sciences. It is a particularly exciting time to focus on environmental risk assessment and analysis because many of the important problems we face - including stormwater, invasive species, toxic chemicals, phosphorus loading, atmospheric deposition, waste disposal, climate change, and even homeland security - require quantitative and objective analysis that can be provided through rigorous assessment and analysis.

This course includes lectures, discussions, projects and presentations. As a starting point, we will discuss how the EPA's ecological risk assessment framework has developed over the last 4 decades. This discussion will provide a context for specific, topical themes that you will help to identify. You will be expected to critically evaluate primary literature, engage in informed discussion, and work together in small groups on a project of personal interest.

Number of Credits: 3 credits, 3 contact hours

Prerequisites: Graduate Standing

Course-Section and Instructors

Course-Section	Instructor
101	Chaudhery Mustansar Hussain

Office Hours for All Chemistry & Environmental Science Instructors: [Fall 2018 Office Hours and Emails](#)

Required Textbook: None. But LECTURE notes from class will be posted on the Moodle/email.

University-wide Withdrawal Date: The last day to withdraw with a **W** is Monday, November 12, 2018. It will be strictly enforced.

Learning Outcomes:

- Students will be able to articulate the differences among probably, risk, and uncertainty in the context of assessment and analysis.
Students will recognize and become conversant with concepts utilized in EPA's Environmental Risk Assessment approaches.
Students will employ knowledge and skills acquired in prior courses and experiences to inform a specific assessment by engaging in a team project.
- Students will be able to extract meaningful information from scientific and technical reports and integrate that information into new knowledge and/or products that are useful to a client.
Students will be able to write a profession proposal and report and make a professional public presentation.
- Students will understand and be able to address technical, policy and human resource challenges typically encountered in doing environmental risk assessments and analysis.

POLICIES

All CES students must familiarize themselves with, and adhere to, all official university-wide student policies. CES takes these policies very seriously and enforces them strictly.

Grading Policy: The final grade in this course will be determined as follows:

Class attendance-Must present/participate in both parts of class	5 %
Group Discussion-after each lecture	5%
Home Work	10 %
Final Paper-Before Final Exam	10%
Final Project/Presentation	10%
Midterm Exam	30%
Final Exam	30 %
Total	100%

Your final letter grade in this course will be based on the following tentative curve:

A	90 - 100	C	70 - 74.5
B+	85 - 89.5	D	55 - 69.5
B	80 - 84.5	F	<55
C+	75 - 79.5		

Attendance Policy: Attendance at classes will be recorded and is **mandatory**. Each class is a learning experience that cannot be replicated through simply "getting the notes."

Homework Policy: Homework is an expectation of the course. The homework problems set by the instructor are to be handed in for grading and will be used in the determination of the final letter grade as described above.

Exams: There will be one midterm exam held in class during the semester and one comprehensive final exam. The following exam periods are tentative and therefore possibly subject to change:

Midterm Exam	Week of October 19-26, 2018
Final Exam Period	December 15 - 21, 2018

The final exam will test your knowledge of all the course material taught in the entire course.

Makeup Exam Policy: There will normally be **NO MAKE-UP QUIZZES OR EXAMS** during the semester. In the event that a student has a legitimate reason for missing a quiz or exam, the student should contact the Dean of Students office and present written verifiable proof of the reason for missing the exam, e.g., a doctor's note, police report, court notice, etc. clearly stating the date AND time of the mitigating problem. The student must also notify the CES Department Office/Instructor that the exam will be missed so that appropriate steps can be taken to make up the grade.

Cellular Phones: All cellular phones and other electronic devices must be switched off during all class times. Such devices must be stowed in bags during exams or quizzes.

ADDITIONAL RESOURCES

Chemistry Tutoring Center: Located in the Central King Building, Lower Level, Rm. G12. Hours of operation are Monday - Friday 10:00 am - 6:00 pm. For further information please click [here](#).

Accommodation of Disabilities: Office of Accessibility Resources and Services (*formerly known as Disability Support Services*) offers long term and temporary accommodations for undergraduate, graduate and visiting students at NJIT.

If you are in need of accommodations due to a disability please contact Chantonette Lyles, Associate Director at the Office of Accessibility Resources and Services at 973-596-5417 or via email at lyles@njit.edu. The office is located in Fenster Hall Room 260. A Letter of Accommodation Eligibility from the Office of Accessibility Resources Services office authorizing your accommodations will be required.

For further information regarding self-identification, the submission of medical documentation and additional support services provided please visit the Accessibility Resources and Services (OARS) website at:

- <http://www5.njit.edu/studentuccess/disability-support-services/>

Important Dates (See: [Fall 2018 Academic Calendar, Registrar](#))

Date	Day	Event
September 4, 2018	T	First Day of Classes
September 10, 2018	M	Last Day to Add/Drop Classes
November 12, 2018	M	Last Day to Withdraw
November 20, 2018	T	Thursday Classes Meet
November 21, 2018	W	Friday Classes Meet
November 22 - 25, 2018	R - Su	Thanksgiving Break - University Closed
December 12, 2018	W	Last Day of Classes
December 14, 2018	F	Reading Day
December 15 - 21, 2018	F - R	Final Exam Period

Course Outline

Lecture	Topic
1.	Overview of Environmental Risk Assessment
2.	Environmental Laws & Regulations
3.	Hazardous Materials-Part I Site Characterization-Part II
4.	Exposure Assessment & Management
5.	Toxicity Assessment & Risk Characterization
6.	Risk Characterization
7.	Midterm Exam
8.	Risk Communication
9.	Risk Reduction
10.	Risk Management
11.	Case study: Ecological risk assessment Case study: Contaminants assessment Case study: Multiple Risk assessment
12.	Guest Speaker & Visit
13.	Project Presentation
14.	Project Presentation
15.	Final Exam